9 March 1971

MEMORANDUM FOR THE RECORD

SUBJECT: Meeting with CDC Officials, 25 Feb 71

1. Subject meeting involved Colonel White, William Norris (President and Chairman of the Board, Control Data Corporation), Hank Forrest/CDC Vice-President for Government Relations) and myself. It resulted from a letter in which Mr. Norris' desire to meet with the Director "on matters of mutual interest" was expressed.

2. Colonel White expressed his regret that the Director was not available, noted his role as the focal point for ADP policy in the Agency and tossed the serve to the visitors. Norris stated unhesitatingly that he was looking for business--that he had known Admiral Raborn as DCI (and during his Polaris days) and [redacted], and wanted to re-establish contact. He alluded to the fact that IBM has a pretty firm foothold here. STATINTL

3. Colonel White acknowledged that there were more IBM machines here than other manufacturers', as is true nationwide, but he cited other equipment in use, including one CDC machine and a couple of UNIVAC pieces, Norris having worked formerly for UNIVAC. He said he was not inclined to let IBM, or any single manufacturer, get too firm a hold on any part of our business, and had had a fairly direct session on this subject a while back with Dr. Emanuel Piore' of IBM. He noted that a CDC 6500 was very nearly selected recently. I summarized the management rationale behind the negative decision. I also noted the function of the IP Board and the several layered review and approval cycle that goes with new hardware acquisitions.

4. The meeting went smoothly and pleasantly. Mr. Norris seemed convinced that CDC was not being unilaterally discriminated against in favor of IBM. He asked about their peripherals competing for acquisition and was answered affirmatively. The meeting lasted about 15 minutes. STATINTL

[redacted]
Chairman, Information Processing Board

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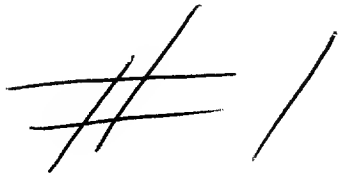

Approved For Release 2002/01/31 : CIA-RDP78-01092A000100080001-1

Arthur D. Little, Inc. ROCKEFELLER CENTER · 630 FIFTH AVENUE · NEW YORK NEW YORK 10020 · (212) 586-2300

STATINTL

April 27, 1971

[redacted]
Central Intelligence Agency
Washington, D.C.

Dear Don:

As I mentioned on the phone, we estimate that used 360/50's are being sold today for something on the order of 65% to 72% of IBM's sales price.

Based on some work we have just completed, our people estimate that (third party) lease rates for 360/50's will hold up quite well over the next few years -- declining to only 90% of current rates by 1973. (This contrasts with expectations for the 360/40's where we expect much greater declines.) As the enclosed chart indicates, a 370/155 offers 3 to 4 times the performance of a 360/50, and therefore 360/50 lease rates should decline to only 40%-74% of current levels. But we question whether many current 50 users will value the additional processing capability of a 155 enough to pay the absolute increase in rent, especially since fully half of 360/50 users are still under DOS, and of the remainder under OS, few are making optimal use of the 50's capabilities. Current 50 users could trade down to the 145, but our people feel they will have emulation difficulties with 1410 and 7010 programs. (Per our phone conversation, there is some confusion on this last point, which I will attempt to clear up.)

We expect 360 values to hold up because users do not perceive dramatic differences from the 370 hardware and software. But if during 1973 or 1974 IBM announces a true fourth generation built around 370 hardware/software and extensions thereto, the 360 line could become obsolete quite swiftly and decline in value precipitously.

What all these speculations about lease rates mean to the sales value of a 360/50 18 months from now is not completely clear to me. But a price of $600,000 for your system today seems a little low, and, even if lease rates in 1973 are 40% of current levels, rather than 90%, a price of $0 for your machine 18 months from now seems much too low.

.. / ...

Arthur D. Little, Inc.

25X1A [redacted] - 2 - April 27, 1971

I enclose some pages from a rough draft report on the present and anticipated value of 360's. If I have neglected to excise the name of the client anywhere, I trust you will do it for me before distributing further.

Best regards,

EJG:lck

Edward J. Gottsman

enc.

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Approved For Release 2002/01/31 : CIA-RDP78-01092A000100080001-1

MOHAWK DATA HISTORY

In 1964 Mohawk Data Sciences Corp. was organized. Mohawk Data's first product, the DATA-RECORDER, through its uniqueness gained success by presenting an effective and economic alternative to the keypunch for data preparation. The DATA-RECORDER was a unit around which a broad product line could be built for a complete marketing and service organization for the end-user customer.

Within weeks it was obvious that Mohawk Data could not rely on dealers or franchised representatives. Direct employees in sales and service were vital. Creative management of resources, including finance, permitted this program to be rapidly implemented.

Today, there are more than 40 different DATA-RECORDER models. Approximately 35,000 units are now in use in some 3000 customer installations. Mohawk Data is represented by the world's largest trained group of data processing people devoted full-time to the input/output/communications needs of end users. The Company has 85 offices, 225 marketing specialists, and 350 field service technicians in the U.S.; 60 offices, 100 salesmen, and 150 technicians in Europe; and 10 offices, 20 salesmen, and 60 technicians in Canada. In addition, its products are sold by distributors in 30 countries throughout the world. Some 230 branches of the National Cash Register Company also sell and service DATA-RECORDERS in the United States and abroad.

Mohawk Data is rather unique, these days, in that it is currently engaged in a continuing build-up of its Home Office and Field Marketing organization to better serve its customers. Without question, the large computer

users are interested in the functional capability of Mohawk Data to service them in the following categories:

1. Account Responsibility
2. Field System Support
3. System Programming
4. Customer Engineering
5. Product Development

We, today, possess these capabilities.

Mohawk Data has organized its manufacturing functions to better serve its customers. Our products are manufactured at these locations:

1. Herkimer, New York
2. Stoneham, Massachusetts
3. King of Prussia, Pennsylvania
4. Anaheim, California
5. Brooklyn, New York
6. Menden, West Germany
7. Eaglescliff, England

The development of such a broadly distributed organization has been arduous and costly. Most important, it has been accomplished with steadily increasing customer confidence in Mohawk Data's ability to identify and serve their data processing needs in a number of important product areas around the central processor.

Subsequent additions to the product line follow the same philosophy of less concern with raw performance and more concern with

with expanding the Company's capability to assist in the solution of wider-ranging peripheral problems. The 1320 Printer, for example, has been a most successful product because it does the job more reliably and economically - not because it holds out the glittering promise of some radically new approach to computer printout.

The Mohawk Data card and paper tape handling equipment offer superior performance/price characteristics while expanding the opportunities to serve specific needs with a variety of alternative Mohawk Data products.

The Company continues to examine carefully such areas as character recognition, micromation, discs, high performance tape drives, data processing supplies, software, and a variety of other fields. The decision to venture forth into new areas depends on the needs of our customers. Our aspiration is not for quantum jumps in the state-of-the-art from basic research. We remain convinced that real progress in the offices of data processing equipment users comes most rapidly and assuredly from a more pragmatic approach to R & D. End users are most likely to profit from evolutionary advancement and from new products and concepts directed toward needed and attainable ends.

In every year since its founding, Mohawk Data has experienced continuing improvement in its financial stature. Since becoming profitable early in its history, Mohawk Data sales and profit levels have constantly and steeply improved. Both asset position and cash flow situation have also rapidly gained.

As an indication of the Mohawk Data financial position, Fortune magazine in 1970 reported that of the top 1,000 companies in the United States, Mohawk Data is ranked: 120th in return on invested capital, 558th in net assets, and 757th in sales volume.

Our profitability and future continue to depend - not on breakthroughs - but on the totality of our service to our customers, on its quality and results.

Approved For Release 2002/01/31 : CIA-RDP78-01092A000100080001-1

#3

Approved For Release 2002/01/31 : CIA-RDP78-01092A000100080001-1

5 April 1971

MEMORANDUM FOR THE RECORD

SUBJECT: SYS Visual Display Terminal

1. A meeting was held on April 2, 1971 with Mr. D. Duncan and Mr. R. B. Davies both of Ron B. Davies Associates, Inc., to discuss the status of the SYS terminal and the SYS Computer Corporation's apparent lack of interest in responding to our requests. Ron B. Davies Associates, Inc., is the marketing representative for SYS in this part of the country and seems interested in selling to the CIA. Mr. Duncan explained to me that a recent discussion at the Board level of SYS resulted in a decision to discontinue marketing its terminal; at least to large accounts. The reason for this, Mr. Davies explained, was the unexpected success of the SYS Micro-Processor extraneous to its integration with a visual display terminal. In the past three months, SYS has signed in excess of two million dollars in contracts and licenses for its Micro-Processor, and as a result, has chosen to commit its resources to exploiting that marketplace. Mr. Duncan and Mr. Davies assured me that they were as disappointed as I because it meant that a very expensive marketing effort has been for nothing.

2. As a result of these developments, we shall make every effort to initiate a competative procurement as quickly as possible.

25X1A

[redacted]
Deputy Chief
Technical Services Branch

5 May 1971

MEMORANDUM FOR: C/IMSB/MSD

SUBJECT : Testing of Teletype 2500 CRT Terminal

1. Recent testing on the Teletype 2500 CRT Terminal revealed a problem in that there seems to be a basic incompatibility with the software on the 360/67. That is, the device normally expects to pass data to the computer a page at a time while the computer expects data from the terminal on a character-by-character basis. There is a way to manually override this problem but is not very efficient.

2. In addition, for use as an interactive device, (as opposed to a data entry device), there are a number of other drawbacks to the device. They are:

a. There is no provision for automatically going to a new page when the screen is full.

b. Keyboard is somewhat clumsy for interactive use when compared to other terminals available.

c. The 2500 has no apparent capability for extra memory without hardware changes.

d. There appears to be a serious limitation on the device's ability to support a hardcopy device and still be connected to the computer.

These points may or may not be important considerations however, I mention them because they exist.

3. In the case of the basic incompatibility, at least some hardware changes would have to be made, but it is difficult at this time to determine how extensive they would be. If enough hardware changes could be made economically then software changes should only be minor.

SUBJECT: Testing of Teletype 2500 CRT Terminal

4. As a whole, for general interactive use, it would seem that the Teletype 2500 CRT Terminal is a less than satisfactory device when compared with others available in the market.

[redacted] 25X1A

Deputy Chief
Technical Services Branch

PROGRAM CONVERSION ASSISTANCE

25 Feb 70

1. General. Effective and efficient conversion of programs written for one computing system to another computing system requires: (a) knowledge of the existing compiler (b) knowledge of the new compiler and (c) knowledge of the specific programs to be converted. Control Data has the capability to satisfy the first two requirements. However, it should be stressed that the Government's cooperation and assistance in satisfying the third requirement will greatly expedite the total conversion effort. Control Data believes that Government participation, to the maximum extent possible, in the initial conversion will not only facilitate that effort, but will prove valuable to the Government in the future, since "in-house" personnel will be familiar with and skilled in the use of the techniques employed in conversion.

2. Current Production Programs. Since Control Data has not had an opportunity to analyze the existing programs, an accurate estimate of the effort to convert them from IBM System 360 to CDC 6000 is not possible at this time. However, to provide some guideline for your overall evaluation, Control Data will, without cost to the Government, provide the machine time necessary to perform conversion and, in consideration for the nature of the work, will also provide up to fifty (50) man-months of personnel support to limit the time required for this conversion. Since at least ninety (90) days will transpire between system order and system acceptance, it is suggested that the Government assign priorities to existing programs for conversion. Thus, those programs most crucial to the Government's operations would be the earliest converted and ready for production runs.

3. Future Programs. Control Data realizes that the Government will continue to receive programs written for the IBM System 360 for some time and these programs will require conversion to the CDC 6000. As expressed in our paper on IBM S/360 to CDC 6000 Conversion, Control Data will provide automatic and semi-automatic programming routines to assist the Government with such conversion. As modifications and/or enhancements to these routines are developed, they will be made available to the Government.

Note: 50 man-months personnel support = more than [redacted] 25X1A

SYSTEMS ANALYST SUPPORT

Control Data will provide, without cost to the Government, one "on-site" Systems Analyst for the life of the system. He shall be primarily responsible for the installation, modification, and maintenance of systems software.

Additionally, Control Data will provide, without cost to the Government, a second Systems Analyst for a period of two years. He shall be responsible for the maintenance of CDC applications software and to assist the Government with its plans for system expansion and/or new system acquisition.

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PROGRAMMING PERSONNEL TRAINING

(See GSA Schedule, Section A-1, Para. 11)

1. Control Data, without charge to the Government, shall train an adequate number of operating and programming personnel, including the initial staff and replacements, at Control Data's training location, or if agreed to, at a Government location.

2. For 6000 Series system customers, Control Data offers the following standard courses of instruction:

Central Processor Compass Coding	5 days
Peripheral Processor Compass Coding	5 days
SCOPE Usage	5 days
SCOPE Analysis	5 days
SCOPE Installation	3 days
SCOPE Workshop	10 days
6000 FORTRAN	5 days
6000 COBOL	5 days
6000 Operator Training	3 days

In addition to the above, when agreed to, special courses can be arranged and the standard courses can be modified to meet your specific training requirements.

3. The training of experienced FORTRAN applications programmers to write FORTRAN programs for the 6000 should require approximately one day. Primarily, this training simply requires the identification of areas of difference that exist between IBM FORTRAN and CDC USASI FORTRAN. Such training could be accomplished during one all-day session or by conducting a one to two hour session daily for a period of one week.

IBM S/360 to CDC 6000 CONVERSION

A significant factor in the evaluation of and the decision to procure a new computer system is the ease with which programs written to run on the old system can be converted to run on the new system. Here we are faced with the situation of not only converting programs already existing, but requiring a capability to convert other programs which will be received in the future still written for the old system. During the course of the evaluation, CDC has had ample opportunity to explore the conversion question in detail and has developed a conversion system to meet the stated requirements.

To facilitate understanding this conversion system and provide a rational explanation of its chronological development, this paper contains three parts. Part I enumerates the fifteen areas of difference existing between the IBM 360 FORTRAN H compiler and the CDC FORTRAN EXTENDED compiler, together with a description of the action taken to reconcile those differences. Part II identifies in which of the benchmark programs these differences occurred and states the man-hours and machine time required to perform the conversion. Part III is a synopsis of the conversion system that has been developed as a result of the findings in Part I and Part II and, we believe, represents a system that can effectively and efficiently assist in both the immediate and continuing conversion effort.

I. IBM 360 FORTRAN H/CDC USASI FORTRAN EXTENDED DIFFERENCES

The differences listed below occur for two primary reasons: (1) the non-USASI usage allowed by IBM 360 FORTRAN H and (2) the use of programming techniques that result in machine dependency. It should be pointed out that item (2) above is not unique to S/360, but usually resulted from earlier conversions whenever IBM introduced a newer machine; i.e.: 709 to 7090, 7090 to 7094, and 7094 to 360. A useful guideline to follow when writing programs in a high-level language is to disallow machine dependent routines. While this can never be enforced categorically, as machine dependency is reduced compatibility between systems is increased and conversion is simplified.

The differences follow:

1. PAUSE (one - five decimal digits or message).IBM
   PAUSE (one - five octal digits).IBM & CDC

   If non-octal symbols are detected, they are replaced with "70707" and the statement is flagged for analysis and documentation change.

2. STOP (one - five decimal digits).IBM
   STOP (one - five octal digits).IBM & CDC

   Same as No. 1. above.

3. IMPLICIT. IBM only

   If non-conventional variable names will be affected, the routine is searched, all affected variable names identified and entered as specifications. The IMPLICIT statement is dropped.

4. *1, *2, *8, *16. IBM only

   Symbols are deleted and the inherent length is accepted, unless a double precision length is indicated, in which case the double precision specification is inserted.

5. '.....' (literal delimiters). IBM (EBCDIC)
   ..... (literal delimiters). CDC (BCD)

   This difference is transparent, since the EBCDIC to BCD conversion makes the change. However, IBM allows literals in the DATA statement. To correct this, DATA statements are scanned and whenever a literal is encountered it is converted to Hollerith using four characters per word thus maintaining compatibility with formatted type conversions.

6. Z (Hexidecimal data). IBM only

   Converted in place to octal data.

7. ENTRY entry point (argument list). IBM only.

   CDC compiler would need to be modified to accept this statement. No difficulty is expected, since all the basic requirements are presently included no major re-write of calling sequence is anticipated.

8. Handle delimiters (+ for IBM, $ for CDC).

   CDC input routine modified to accept the + symbol. This appears to be a simple matter of modifying one Peripheral Processor routine to accept both the "+" and the "$" signs.

9. Define File and associated IBM random accessing statements vs CDC random accessing statements.

   Presently this is easily handled by an experienced programmer. It would eventually be included in the conversion system, since its present low rate of usage is expected to increase.

10. Read Statements (IBM allows for End-Of-File and Read-Err branching within the Read statement).

    Since CDC handles the same conditions, but with function calls, this is easily handled by the conversion system. The necessary "IF(EOF(i))" is generated and inserted immediately following the Read statement.

11. Variable Returns.

    CDC FORTRAN has this capability and the conversion system will generate required statements to convert from 360 variable return statements. This requires recognition of the variations in three others statements: CALL, SUBROUTINE, and RETURN.

    IBM CALL S (A,B,&i_1,&i_2)
    CDC CALL S (A,B), RETURNS (i_1,i_2)

    IBM SUBROUTINE (A,B,*,*)
    CDC SUBROUTINE (A,B),RETURNS (n_1,n_2)

    IBM RETURN i_1
    CDC RETURN n_1

12. Function Names.

    Some differences in function names exist, most of which are detected by the conversion system and the modification made in place. Any function names not recognized and not available from the library to the loader are listed by the Loader as Unresolved External References.

13. Specification statements after executable statements. IBM only.

    The conversion system recognizes this discrepancy and re-locates the statements as required.

14. Word Size. IBM 32-bit vs CDC 60-bit.

    Since IBM's word size is smaller than CDC's, the only problem encountered has been when referencing arrayed DATA statements containing literals or Hollerith data. The conversion system has been designed to change such DATA statements to four character Hollerith strings.

15. Double Precision to Single Precision.

    This would require an additional file pass, since it is optional. This program detects double precision specifications, constants, functions, and format usage and returns them to their inherent single precision specifications. Computed indexing, however, must be detected manually and modified (found in Despod only).

II. CONVERSION OF BENCHMARK PROGRAMS

The major problems (excluding the double to single precision effort mentioned in Part I) solved during the recent conversion are discussed below. Those programs not discussed have been omitted because minimal effort was required in their conversion.

1. SMPIE

   Included the READ (EOF) and the use of literals in DATA statements. Man-hours expended was less than four hours and machine time used was less than ½ hour. Other than double precision constants it was handled manually.

2. STEPWISE REGRESSION

   Involved the conversion of random access statements and was accomplished with two man-hours and five minutes of machine time.

3. TADPOL

Initially, this converted and ran to EOJ with a minimum of effort. The output, however, was incorrect. Mr. Macurdy quickly detected several errors and implemented the required changes. Overall, the effort was not excessive. However, it should be mentioned that in the development of various portions of the conversion system, TADPOL and other programs were used for test cases. These early conversion routines did introduce errors into the converted programs that were, in most cases, difficult and time consuming to identify. They have since been corrected.

CalComp plot routines were converted without difficulty.

4. RADIO

Introduced variable formats referencing Hollerith DATA statement strings. These were machine dependent, since they were designed to allow changing the Hollerith strings during execution and were based upon IBM's 4 character word vs CDC's 10 character word. Our conversion system has since been modified to allow for this. RADIO also contained the variable return statement, which also is now handled by the conversion system.

5. IMS

This program contained the ENTRY (argument list) statement, some function names that had not been converted correctly and a FORTRAN subroutine which simulated a random number generator. It was the latter subroutine which took an unreasonable amount of time to locate, since the machine dependency of the routine was not brought to our attention until Mr. Macurdy spotted it. It was quickly rectified by replacing the subroutine with the CDC random number generator routine.

6. MODEL

This program also contained a machine dependent random number generator, but since it was called as a function it was quickly identified and changed. The difficulty was in preparing the file for the CDC update capability, an obstacle was encountered when we attempted to implement "overlay." We completely re-wrote this file preparation

routine prior to the latest DESPOD conversion. The initial version made it virtually impossible to select various subroutines for needed load modules. After working our way past this point, some effort was spent evaluating the "overlay" and "segment" capabilities of the loader. The conclusion being that the amount of core saved by overlay techniques was not sufficient to justify the increased running time.

7. DESPOD

Realizing that DESPOD has undergone numerous rewrites, modifications, and incorporates various levels of FORTRAN techniques, we have a continuing interest in the problems it poses. We felt that the experience gained in working with DESPOD will assist us in designing and testing the final conversion system and will provide us an adequate test of its effectiveness. Some system re-design did result from this effort. Whereas the other programs were taken from double to single precision prior to being passed through the conversion system, DESPOD was handled exactly the reverse. No better vehicle could have been used than DESPOD. It identified many problem areas and caused re-writes of some conversion routines that previously had been thought as finalized.

This effort also identified two problem areas that definitely require intervention when converting programs. First, the use of decimal constants to introduce character strings. A separate program has been developed that allows for these statements to be converted to Hollerith strings, thus removing machine dependency. But, intervention is required to discriminate these statements from valid decimal constants. This problem will be given further analysis, it appears that this could be automated when we check each A Type conversion element to insure that its contents are in fact Hollerith.

The second problem probably results whenever a program is converted to 360 double precision. Integer variables stored within a double precision array require a computation to determine their indexing value. Our conversion system can not detect this condition, since such equations could be valid. An understanding of these techniques used to convert to 360 double precision was the only means of identifying these occurrences. We are developing a program that will flag possible

use of these techniques. This would be a de-bugging aid rather than a conversion technique.

III. CONVERSION SYSTEM SYNOPSIS

The conversion system is comprised of three phases:

1. File Preparation (This step is wholly or partially optional.)

   a. The 360 tape is copied to determine the condition of the tape (the ability of the 360 tape drives to produce low quality output occurs too frequently to be ignored). Update control cards are inserted if desired.

   b. This step is optional. The copied tape can then be input to the TIDY program. Since TIDY is designed to clean up programs that have been reworked a number of times.

2. Conversion

   This program is designed to read in and manipulate entire subroutines on an individual basis (600 statements per subroutine at present). This allows the conversion to be done in memory and keeps the specification statement area available for modification (if required), and may facilitate conversion of Hollerith constants.

3. Double to Single Precision (optional)

   Since the compiler differences have been removed, this is a short statement by statement pass.

4. Compilation

   Should be error-free after completion of 1, 2, and 3.

Our present efforts are to develop required Analytical and System Documentation to ensure the overall effectiveness and completeness of our Conversion System. This phase is expected to continue for the next four weeks. At that time we will estimate the projected effort, assign task

areas, and commence with the final programming and testing. It should be noted that various routines needed within the conversion programs are available. These, however, will be re-evaluated to ensure their effectiveness both in language and design.

TAPE COMPATIBILITY

Tape files written by a 360 FORTRAN program are processed in one of two basic ways depending on whether the file was produced by a formatted or unformatted WRITE statement. In all cases a tape file produced on a 360 can be read with all the data preserved no matter what the format of the tape.

A. Formatted Files

A formatted file is a simple case as the only special requirement is the code translations. The translation tables will normally be one which is selected as a standard but can actually be user-oriented.

B. Unformatted Files

Unformatted files will be treated as a special case of 6000 SCOPE's S-tapes (stranger tapes). The particular kind of unformatted file will normally be specified on a REQUEST card but could be specified using a CALL or a systems macro. The unformatted files and the processing of them falls into three categories described below.

1. Integer Data

Records containing integers will be passed to the normal FORTRAN buffer. The FORTRAN I/O routine will strip off any block control words (for variable length blocks the length will be saved to determine how to handle the last word of the buffer). The data will then be converted to 6000 format as the list on the READ statement is processed.

2. Floating Point Data

Floating point data will be handled exactly as integer data except that obviously the data conversion is different.

3. Mixed Data

Data of mixed type will be handled using subroutines. One general subroutine will be provided which allows a user to specify a record description table which directs how data is to be converted.

C. Job Control

The control card (REQUEST) used to define tape files may have fields to describe the file. Typical fields might be:

a. VI - Variable length integer

b. FF240 - Fixed block, floating point, 240 bytes/record

A typical REQUEST card might be

REQUEST, TAPEI, VF, HY.

to describe a file called TAPEI, variable length floating point data and 800 bpi.

CDC 6000 CUSTOMERS HAVING TERMINAL APPLICATIONS

Following is a partial list of CDC 6000 customers who are employing terminal operations as an integral part of their systems. This is by no means a complete list, since nearly every 6000 installation utilizes terminals to some degree. All the customers have expressed their willingness to discuss their systems with you in complete confidence and frankness.

1. Michigan State University

   Computer: 6500 - 65K
   Terminals: 10 TTY + 2 200 User Terminals (200 UT)
   Contact: Dr. Julian Katley, 517/355-3600

2. Purdue University

   Computer: 6500 - 131K
   Terminals: 360/20's and 1130's for batch, interactive is a large number of TTY terminated in 7094 which acts as a super PP to the 6500.
   Contact: Mr. John Steele, 317/749-4232

3. Florida State University

   Computer: 6400 - 65K
   Terminals: 14 TTY
   Contact: Mr. Arvil Williams, 904/599-4770

4. Computer Knowledge Corp.

   Computer: 6400 - 65K
   Terminals: 2 at present
   Contact: Mr. John Cundigg, V.P. Operations, 512/736-4101

5. Temple University

   Computer: 6400 - 65K
   Terminals: 8
   Contact: Mr. Bill Jansen, Sys. Mgr., 215/787-8491

6. Lehigh University

   Computer: 6400 - 65K
   Terminals: (count N/A)
   Contact: Mr. John Smith, Dir. Comp. Center, 215/867-5071

7. Bonneville Power

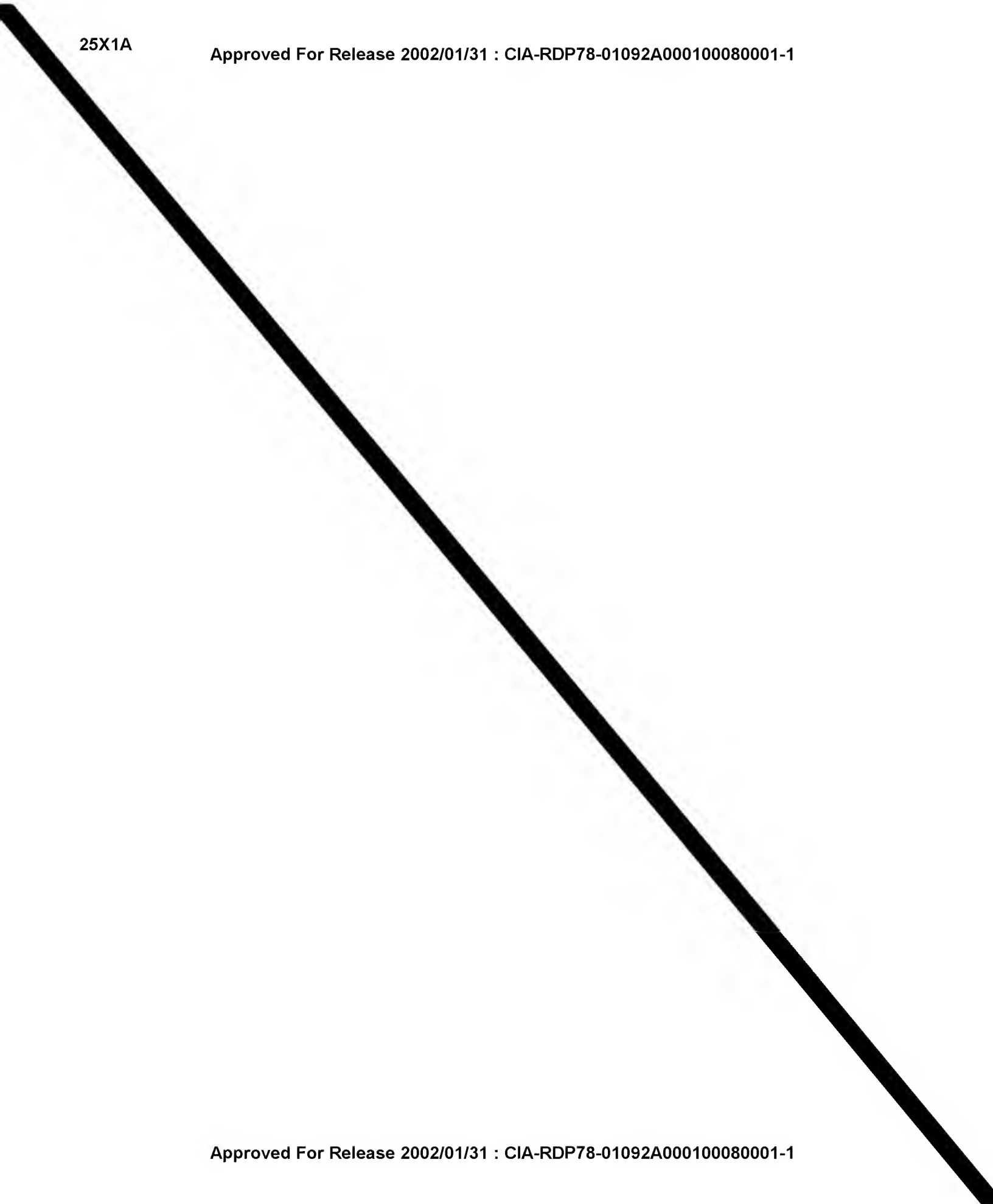
Computer: 6400 - 65K
Terminals: 3 200 UT + 2 TTY
Contact: John Bloodworth, Digital Prog. Mgr., 503/234-3361 x4518

8. United Computing Corp.

Computer: 6400 - 65K
Terminals: approx. 100 TTY
Contact: Mr. William Hawkins, Mgr. Data Center/Software Dev., 816/221-9700

9. TRW

Will begin inplant work next week with KRONOS system. Contact can be arranged if desired.



Approved For Release 2002/01/31 : CIA-RDP78-01092A000100080001-1

SUBJECT: RCA Spectra 70/45 dtd 8 Feb 68

DISTRIBUTION:
Orig + 1 - ADSE
1 - C/PMS/DDS&T
1 - C/IPS/OPPB
1 - RCA Rep
1 - Admin/OCS(file)
25X1A 1 - CSA/OCS [redacted]
1 - C/OPS/OCS
2 - D/OCS (Subj & Chrono)

STATINTL O/D/OCS: [redacted] (8Feb68)

SPECIFICATIONS AND COSTS OF DISCONTINUED OR CANCELLED RCA SPECTRA 70/45 EQUIPMENT

Qty	Type/Model Feature	Description	Serial Number	Basic Monthly Rental Each	Total
A.	**Discontinue following installed equipment by 15 May 1968**				
1	70/45 F	Processor (131,072 Bytes)	1144	$7,000	
1	5016	Selector Channel		375	
1	5036-45	301/501 Emulator		850	$ 8,225
1	70/97	Console	1196		330
4	70/442-2	Magnetic Tape Unit	1982 1983 1985 1986	900	3,600
1	70/442-2	Magnetic Tape Unit	1987	900	900
1	5412-2	Seven-Channel Tape Feature		N.C.	
1	70/221-21	Paper Tape Reader/Punch	1002	580	
1	5219-11	Advanced Sprocket 6-Level Read		45	625
1	70/234-10	Card Punch	1116	450	450
1	70/237-10	Card Reader	1274	650	
1	5204	Column Binary Feature		30	680
1	70/243-10	Printer, Hi-Speed	1281	1,000	1,000
1	70/472-208	Tape Controller - Dual Channel	1139	975	975
1	70/473-208	Tape Controller - Dual Channel	1027	1,050	
1	5402-2	Pack-Unpack Feature		85	1,135
		SYSTEM TOTAL			$17,920
B.	**Cancel following "On Order" Equipment immediately**				
1	70/461-208	Tape Controller - Dual Channel			$ 1,650
1	581	Tape Station			544
1	70/224-10	Paper Tape Reader		$ 550	
1	5253	Advanced Sprocket 6-Level Read		45	595
10	70/442-2	Magnetic Tape Station (120KB)		775	7,750

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21 June 1965

STATINTL NOTE FOR: [redacted]

SUBJECT : Hardware Report

Attached is a copy of Chapter 1 of Hardware Report which I
STATINTL wrote and sent to [redacted] I realize that you were to do this, but I believe it was only thing lacking for complete report.

This way it is done, or you may rewrite, change, substitute, etc. at will. See no reason not to wrap up total report this week, unless Patrick goes wild with it.

[redacted] 25X1A

Attachment as stated

mm